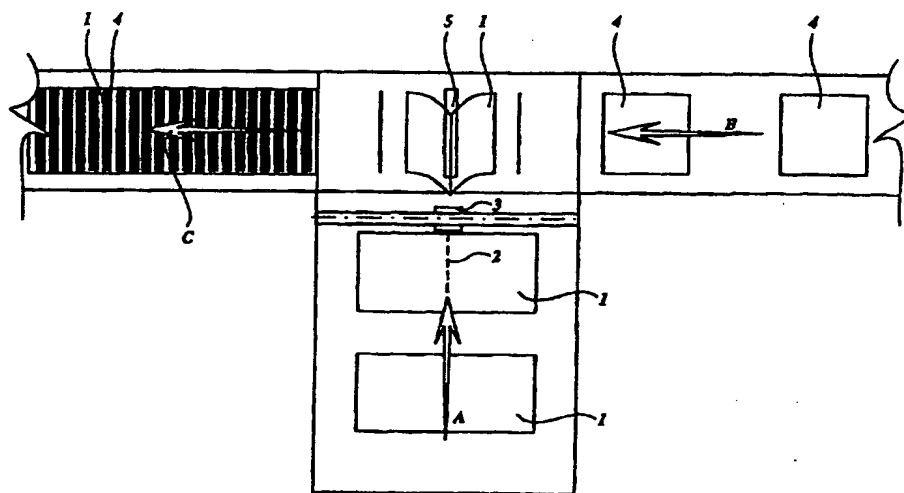




INTERNATIONAL APPLICATION PUBLISHED UNDER THE PATENT COOPERATION TREATY (PCT)

| | | |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------|
| (51) International Patent Classification ⁶ : B42C 11/02 | A1 | (11) International Publication Number: WO 98/14333 (43) International Publication Date: 9 April 1998 (09.04.98) |
| <p>(21) International Application Number: PCT/NL97/00541</p> <p>(22) International Filing Date: 29 September 1997 (29.09.97)</p> <p>(30) Priority Data: 1004178 2 October 1996 (02.10.96) NL</p> <p>(71)(72) Applicant and Inventor: OOSTERBOSCH, Wilhelmus, Cornelius, Antonius [NL/NL]; De Kuip 3, NL-5502 HP Veldhoven (NL).</p> <p>(74) Agent: VAN KAN, J., J., H.; Algemeen Octrooibureau, World Trade Center, Past. Petersstraat 160, NL-5612 LV Eindhoven (NL).</p> | <p>(81) Designated States: AL, AM, AT, AT (Utility model), AU, AZ, BA, BB, BG, BR, BY, CA, CH, CN, CU, CZ, CZ (Utility model), DE, DE (Utility model), DK, DK (Utility model), EE, EE (Utility model), ES, FI, FI (Utility model), GB, GE, GH, HU, ID, IL, IS, JP, KE, KG, KP, KR, KZ, LC, LK, LR, LS, LT, LU, LV, MD, MG, MK, MN, MW, MX, NO, NZ, PL, PT, RO, RU, SD, SE, SG, SI, SK, SK (Utility model), SL, TJ, TM, TR, TT, UA, UG, US, UZ, VN, YU, ZW, ARIPO patent (GH, KE, LS, MW, SD, SZ, UG, ZW), Eurasian patent (AM, AZ, BY, KG, KZ, MD, RU, TJ, TM), European patent (AT, BE, CH, DE, DK, ES, FI, FR, GB, GR, IE, IT, LU, MC, NL, PT, SE), OAPI patent (BF, BJ, CF, CG, CI, CM, GA, GN, ML, MR, NE, SN, TD, TG).</p> <p>Published With international search report. In English translation (filed in Dutch).</p> | |

(54) Title: METHOD AND DEVICE FOR AFFIXING ONE OR MORE SHEETS IN A COVER



(57) Abstract

The invention relates to a method and a device for affixing one or more sheets in a cover. A sheet-like cover in flat condition is supplied at least substantially in horizontal direction. A crease is formed at the location of the intended back of the cover, and a strip of adhesive material extending parallel to said crease is applied near said crease. Then the sheets are supplied in vertical direction, in such a manner that the sheets strike against the cover and push the cover through guide means. The device comprises a supply mechanism for supplying the covers, as well as means for forming a crease and means for applying adhesive material parallel to the crease. The supply means are made up of a pair of rollers, which can be rotated about axes of rotation occupying a fixed position during operation.

FOR THE PURPOSES OF INFORMATION ONLY

Codes used to identify States party to the PCT on the front pages of pamphlets publishing international applications under the PCT.

| | | | | | | | |
|----|--------------------------|----|------------------------------------------|----|----------------------------------------------|----|--------------------------|
| AL | Albania | ES | Spain | LS | Lesotho | SI | Slovenia |
| AM | Armenia | FI | Finland | LT | Lithuania | SK | Slovakia |
| AT | Austria | FR | France | LU | Luxembourg | SN | Senegal |
| AU | Australia | GA | Gabon | LV | Latvia | SZ | Swaziland |
| AZ | Azerbaijan | GB | United Kingdom | MC | Monaco | TD | Chad |
| BA | Bosnia and Herzegovina | GE | Georgia | MD | Republic of Moldova | TG | Togo |
| BB | Barbados | GH | Ghana | MG | Madagascar | TJ | Tajikistan |
| BR | Belgium | GN | Guinea | MK | The former Yugoslav Republic of Macedonia | TM | Turkmenistan |
| BF | Burkina Faso | GR | Greece | | | TR | Turkey |
| BG | Bulgaria | HU | Hungary | ML | Mali | TT | Trinidad and Tobago |
| BJ | Benin | IE | Ireland | MN | Mongolia | UA | Ukraine |
| BR | Brazil | IL | Israel | MR | Mauritania | UG | Uganda |
| BY | Belarus | IS | Iceland | MW | Malawi | US | United States of America |
| CA | Canada | IT | Italy | MX | Mexico | UZ | Uzbekistan |
| CF | Central African Republic | JP | Japan | NE | Niger | VN | Viet Nam |
| CG | Congo | KE | Kenya | NL | Netherlands | YU | Yugoslavia |
| CH | Switzerland | KG | Kyrgyzstan | NO | Norway | ZW | Zimbabwe |
| CI | Côte d'Ivoire | KP | Democratic People's Republic of Korea | NZ | New Zealand | | |
| CM | Cameroon | KR | Republic of Korea | PL | Poland | | |
| CN | China | KZ | Kazakhstan | PT | Portugal | | |
| CU | Cuba | LC | Saint Lucia | RO | Romania | | |
| CZ | Czech Republic | LI | Liechtenstein | RU | Russian Federation | | |
| DE | Germany | LK | Sri Lanka | SD | Sudan | | |
| DK | Denmark | LR | Liberia | SE | Sweden | | |
| EE | Estonia | | | SG | Singapore | | |

Method and device for affixing one or more sheets in a cover.

5 The invention relates to a method for affixing one or more sheets in a cover, wherein a sheet-like cover in flat condition is supplied at least substantially in horizontal direction, a crease is formed at the location of the intended back of the cover, and a strip of adhesive material extending parallel to said crease is applied near said folding line, after which the sheet(s) is (are) supplied in vertical direction, in such a manner that said sheet(s) strike(s) against the cover at the location of the crease, thus pushing the cover through guide means in order to fold the cover double.

10 Quite frequently sheets joined into a bundle, for example, or a single, more or less concertinaed sheet or the like are to be enveloped by a cover or jacket, which is made up of a sheet of material which has been folded double. So far it has been usual to fold the covers or jackets double in advance, and to insert the sheets by hand into the covers or jackets in which they are to be affixed and possibly bond them therein by means of an adhesive material or the like. This is a time-consuming and labourious method, which is furthermore costly.

20 From French patent No. 4691211, which was published in 1914, a device is furthermore known which comprises gripping means which are movable in horizontal direction with respect to each other, between which gripping means one or more sheets can be clamped, whilst the gripping means are also capable of vertical reciprocating movement in order to push the sheets and the cover between guide means. This requires a complicated movement of the clamping means and thus a costly construction of the machine. Furthermore only an intermitting and thus slow operation can be achieved.

30 The object of the invention is therefore to obtain a method of the above kind, wherein the affixing of said sheets in said covers can take place in a simple and efficient manner.

35 According to the invention this can be achieved in that the sheets are moved in vertical direction by means of a pair of rollers, which can be rotated about axes of rotation occupying a fixed position during operation.

The method according to the invention makes it possible to have the cover envelope the sheets in a continuous, quick and

inexpensive manner.

A particularly efficient device for carrying out the method is obtained with a device comprising a supply mechanism for supplying the sheet-like covers in flat condition in horizontal direction, parallel to the longitudinal direction of the intended back of the cover, whereby means for forming a crease and means for applying adhesive material parallel to said crease are disposed near said supply mechanism, whilst the device furthermore comprises supply means for supplying sheets in at least substantially vertical direction as well as guide means for folding the cover double, whereby according to the invention the device is provided with a pair of rollers, which can be rotated about axes of rotation occupying a fixed position during operation, in order to push the sheet(s) in the direction of the cover.

The invention makes it possible to obtain a device of simple construction which does not comprise means which are to be moved in vertical and horizontal direction in a complicated manner in order to push the sheets in the direction of the covers.

The invention will be explained in more detail hereafter with reference to the accompanying Figures.

Figure 1 is a diagrammatic plan view of the layout of a machine according to the invention.

Figure 2 is a diagrammatic side view of an embodiment of the machine.

Figure 3 is a diagrammatic side view of a part of the device illustrated in Figure 1.

As is diagrammatically indicated in Figure 1, the sheets of material 1, of which the covers are to be formed, are supplied in horizontal position in a direction indicated by arrow A. A crease 2 extending parallel to the direction of movement is thereby formed in sheet 1 at the position of the intended back of the cover during the movement of the sheets of material 1 in the direction of arrow A. Furthermore a strip of adhesive material can be applied parallel to the crease by means of a spray gun 3 (diagrammatically indicated) or the like. Depending on the eventual form of the combination of sheet(s) and cover being aimed at, a strip of adhesive material may be applied coincident with crease 2, a strip of adhesive material may be applied beside the crease, on one side thereof, or two strips of adhesive material may be applied on either

side of the crease.

The sheet or the bundle of sheets 4 inserted into the cover is supplied in a direction indicated by arrow B, perpendicularly to the direction of movement indicated by arrow A, seen in plan view.

5 The supply mechanism for the sheet(s) 4 is thereby configured such that sheet(s) is (are) supplied perpendicularly to the horizontal, flat cover at the location of the crease, so that the sheet(s) 4 being supplied push(es) cover 1 down through a guiding slot 5 at the location of the crease, in such a manner that cover 1 is folded double and the sheet(s) being supplied are bonded in cover 1 simultaneously with the adhesive material. The finished products thus formed are discharged in the direction of arrow C.

10 As is diagrammatically shown in more detail in Figure 2, the sheets 1, of which the covers are formed, can be supplied by transport means 6 and be placed one by one between a pair of transport rollers 8 disposed one above the other by means of a transport mechanism comprising suction cups, for example, said transport rollers being configured such that the aforesaid crease 2 will be formed in the sheet by said transport rollers.

15 Then a conveyor belt 9 will pass the sheet 1 thus provided with a crease 2 under one or more guns 10 disposed one behind the other, seen in Figure 2, in order to apply an adhesive to the sheet.

20 Preferably two guns are provided, whereby one gun or both guns can be selectively operated in order to apply one strip of adhesive material beside or on crease 2 or two strips of adhesive material on either side of the crease, according to which is desired.

25 The sheet 1 thus provided with a crease and with one or more strips of adhesive material is moved, by means of conveyor belt 9, between two pairs of rollers 10, 11 and 12, 13 disposed one above the other, whose central axes extend parallel to crease 2, and that in such a manner that crease 2 is located centrally between the two pairs of rollers disposed one above the other.

30 Two endless conveyor belts 14, 15 disposed one above the other are provided for supplying the sheet(s) 4 to be enveloped by cover 1, which conveyor belts are guided by means of rollers 16 supporting the belts, in such a manner that the direction of movement of the sheet(s) 4 being supplied in horizontal direction, as indicated by arrow B, is

35

gradually changed, in such a manner that the sheet(s) 4 are inserted in substantially vertical direction between the two rollers 10 and 12 lying side by side as indicated by arrow D, at the outlet gap of the two belts present above said two rollers 10, 12, whereby sheet(s) 4 strike(s) the sheet 1 present between pairs of rollers 10, 11 and 12, 13 in substantially vertical direction at the location of crease 2. The sheet(s) 4 will be moved further downward, (seen in Figure 3) by the rollers 10 and 12, which are likewise driven, of the two pairs lying side by side of rollers disposed one above the other, whereby the cover 1 is folded double in the gap bounded by rollers 11 and 13.

The sheet(s) 4 thus provided with a cover 1 is (are) moved downward to a discharge belt 19 by further guide rollers 17 and a guide belt 18, in order to be discharged in the direction according to arrow E.

It will be apparent that the device according to the invention makes it possible in the above-described manner to provide a sheet or a bundle of sheets 4 with a cover 1 adhered to said sheet or bundle of sheets.

CLAIMS

1. A method for affixing one or more sheets in a cover, wherein a sheet-like cover in flat condition is supplied at least substantially in horizontal direction, a crease is formed at the location of the intended back of the cover, and a strip of adhesive material extending parallel to said crease is applied near said crease, after which the sheet(s) is (are) supplied in vertical direction, in such a manner that said sheet(s) strike(s) against the cover at the location of the crease, thus pushing the cover through guide means in order to fold the cover double, characterized in that the sheets are moved in vertical direction by means of a pair of rollers, which can be rotated about axes of rotation occupying a fixed position during operation.

2. A device for carrying out the method according to claim 1, wherein said device comprises a supply mechanism for supplying the sheet-like covers in flat condition in horizontal direction, parallel to the longitudinal direction of the intended back of the cover, and wherein means for forming a crease and means for applying adhesive material are disposed near said supply mechanism, whilst the device furthermore comprises supply means for supplying sheets in at least substantially vertical direction as well as guide means for folding the cover double, characterized in that said supply means are made up of a pair of rollers, which can be rotated about axes of rotation occupying a fixed position during operation, in order to push the sheet(s) in the direction of the cover.

3. A device according to claim 2, characterized in that two conveyor belts for moving said sheet(s) are disposed upstream of said pair of rollers, seen in the direction of movement of said sheet(s), whereby the opposing parts of the conveyor belts are guided in such a manner that the direction of movement of the sheets through the conveyor belts is converted from an at least substantially horizontal supplying direction into an at least substantially vertical discharging direction during operation.

4. A device according to claim 3, characterized in that near the place where the vertical supply of the sheet(s) takes place a pair of idlers of the conveyor belts are disposed at least substantially vertically above the pair of rollers pushing the sheet(s) in the direction

of the cover.

5. A device according to any one of the preceding claims, characterized in that the guide means for folding the cover double are made up of further rollers being rotatable about axes of rotation.

5 6. A device according to any one of the claims 2 - 5, characterized in that said means for applying adhesive material comprises two supply means for adhesive material, whereby it is possible to selectively operate either one of said supply means or both, in order to apply a single strip of adhesive material or two parallel strips of
10 adhesive material to the cover.

1/2

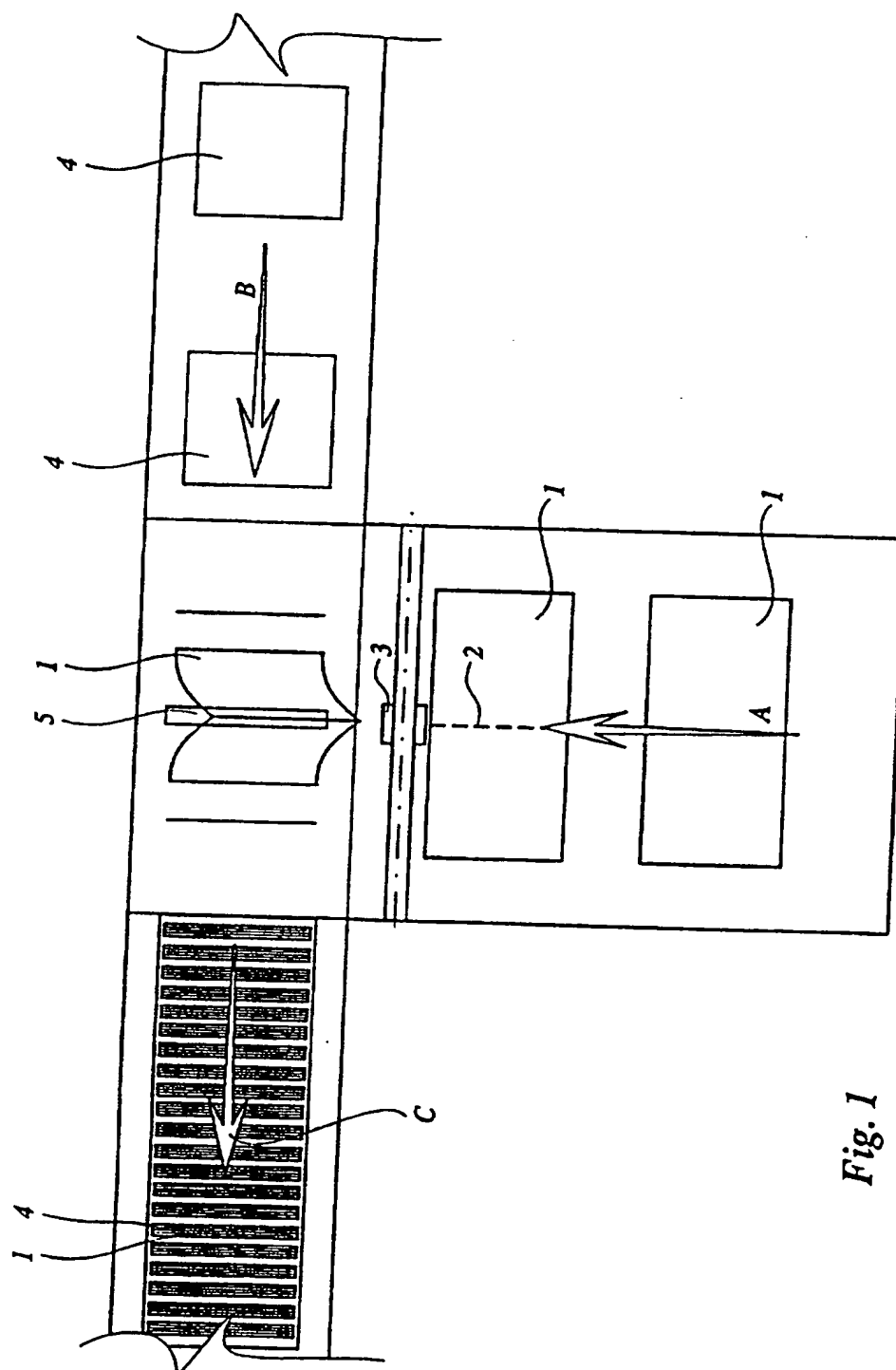


Fig. 1

2/2

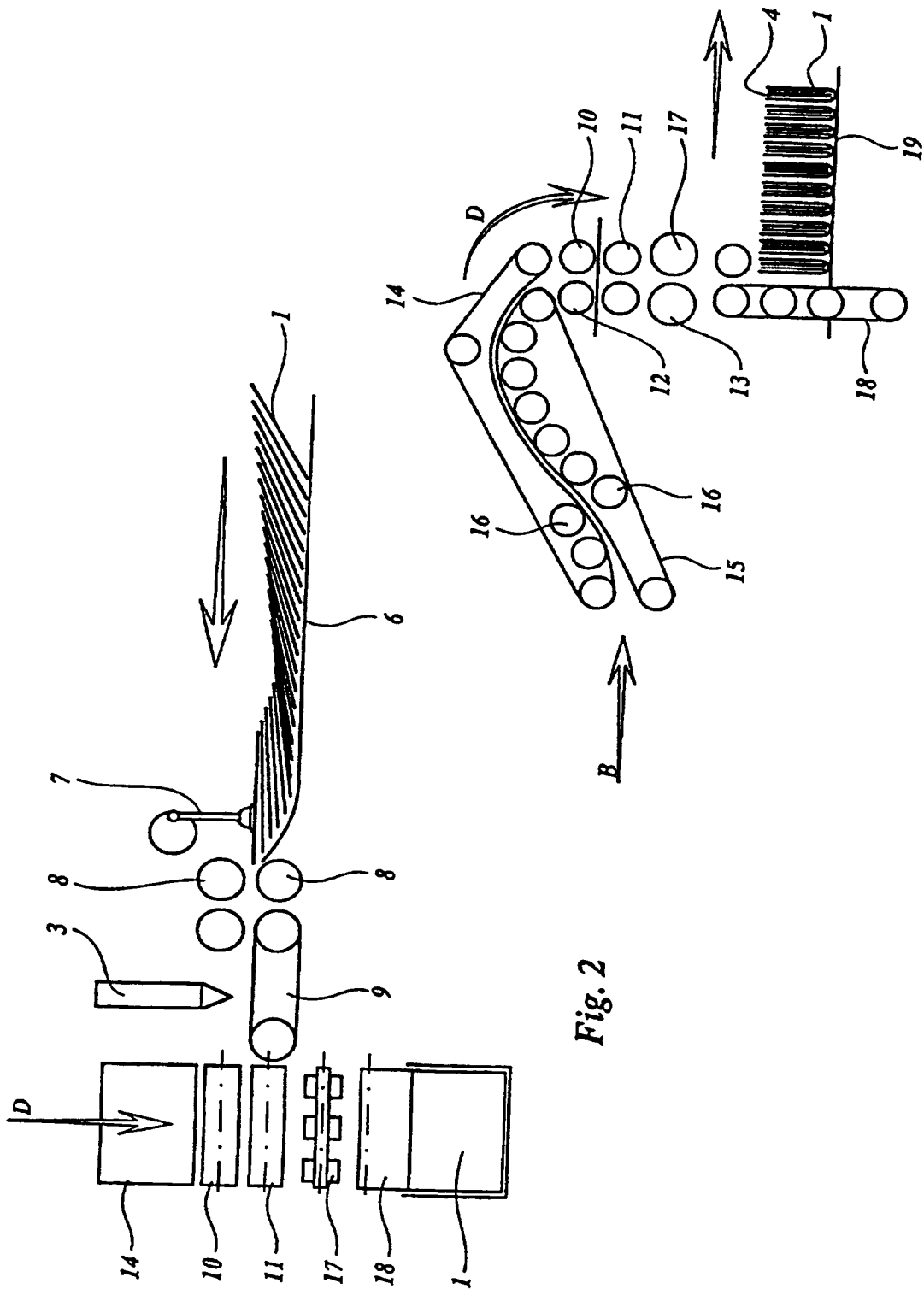


Fig. 3

Fig. 2

INTERNATIONAL SEARCH REPORT

International Application No

PCT/NL 97/00541

A. CLASSIFICATION OF SUBJECT MATTER
IPC 6 B42C11/02

According to International Patent Classification(IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)
IPC 6 B42C

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

| Category * | Citation of document, with indication, where appropriate, of the relevant passages | Relevant to claim No. |
|------------|------------------------------------------------------------------------------------------|-----------------------|
| Y | FR 469 121 A (SPIESS) 24 July 1914 cited in the application see the whole document | 1-5 |
| Y | GB P05965 A (SPIESS) 24 June 1915 & GB,A,05965 A.D. 1914 see the whole document | 1-5 |

☐ Further documents are listed in the continuation of box C.

☒ Patent family members are listed in annex.

* Special categories of cited documents :

- "A" document defining the general state of the art which is not considered to be of particular relevance
- "E" earlier document but published on or after the international filing date
- "L" document which may throw doubts on priority claim(s) or which is cited to establish the publication date of another citation or other special reason (as specified)
- "O" document referring to an oral disclosure, use, exhibition or other means
- "P" document published prior to the international filing date but later than the priority date claimed

- "T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention
- "X" document of particular relevance; the claimed invention cannot be considered novel or cannot be considered to involve an inventive step when the document is taken alone
- "Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.
- "&" document member of the same patent family

Date of the actual completion of the international search

23 December 1997

Date of mailing of the international search report

15/01/1998

Name and mailing address of the ISA

European Patent Office, P.B. 5818 Patentlaan 2
NL - 2280 HV Rijswijk
Tel. (+31-70) 340-2040, Tx. 31 651 epo nl,
Fax: (+31-70) 340-3016

Authorized officer

Loncke, J

INTERNATIONAL SEARCH REPORT

Information on patent family members

International Application No

PCT/NL 97/00541

Patent document
cited in search report

Publication
date

Patent family
member(s)

Publication
date

FR 469121 A

NONE

GB P05965 A

NONE